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## ACCEPTED MANUSCRIPT

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## ABSTRACT

Fat separation, gelation or sedimentation of UHT milk during shelf-storage represent instability phenomena causing the product rejection by consumers. Stability of UHT milk is of increasing concern because access to emerging markets currently implies for this product to be stable during shipping and prolonged storage, up to 12 months. The role of microfiltration prior to UHT process in avoiding or retarding the gelation or sediment formation was studied by comparing microfiltered UHT milk to conventional UHT milk. A second trial was set up to study the effects of double ultrahigh pressure homogenization in delaying the cream rising and UHT milk homogenized once at lower pressure was taken as control. All milk samples were produced at industrial plant level. Milk packages were stored at 22 °C, opened monthly for visually inspecting the presence of cream layer, gel or sediment and then analysed. Microfiltration markedly delayed the formation of both gel particles and sediment, with respect to the control, and slowed down the proteolysis in terms of accumulation of peptides although no correlation was observed between the two phenomena. The double homogenization, also evaluated at ultra-structural level, narrowed the fat globule distribution and the second one (400 MPa), performed downstream to the sterilization step, disrupted the fatprotein aggregates produced in the first one (250 MPa). The adopted conditions avoided the Download English Version:

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